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STATE REGULATION OF MUNICIPALLY OWNED PLANTS¹

BY C. M. LARSON²

The real functions of a regulating body whether centralized as a state commission or localized in the common council or a local commission are very generally misunderstood. This is especially true if the plant under consideration is owned by a municipality. The proper regulation of any utility embraces two broad subjects: that of service and that of rates. The question of propriety of regulation of municipal plants will be much more readily understood if it be borne in mind at all times that the question of service to be rendered by a utility is of more importance than that of the rates charged. The primary purpose for which all utilities, private and municipal, are in existence is that of giving service to the public, the question of rates to be charged is of secondary importance. It must be insisted that the first duty of a utility is to furnish adequate service, even though a poorer service might be furnished at a lower rate.

It appears to be the general conception that the regulation of profits of a public utility is the prime function of a commission, and that, after the profits have been reduced to a reasonable amount, the services of the commission are no longer necessary. This conception is erroneous, but even if the question of profits alone were the only matter to be considered, the commission's duties are far from finished when the earnings of a utility plant are so adjusted that the total profits are no more than a just return upon the fair value of the property. The utility may be earning only a fair profit, or even less, and still the rates to certain individuals or class of individuals may be far from equitable. The problem of construction of schedules that will be equitable as between the various individuals and classes of consumers is a much more difficult matter than the regulation of total profits. To be equitable the schedules should be so arranged that each consumer is required to meet as nearly as possible his just

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and proper share of the expenses of the utility. If the schedules are not so adjusted some consumers are actually paying for the service supplied to others. The removal of discrimination from the schedules of a utility plant is one of the hardest problems with which a regulating body has to deal. This applies as well to private plants as to municipal plants, but in the latter we often have more serious discrimination than in the former. Elimination of discrimination from schedules requires the most searching investigation by men of scientific training and practical knowledge of operating matters, and involves a recognition of the fact that certain costs are incurred as soon as a consumer is connected to the system, regardless of whether or not he makes use of the service, and that a minimum charge should be made to cover this, to which should be added a charge for the service actually rendered, this latter to be based upon the cost of rendering this service. Local managements do not always recognize the importance of these principles, and even if they do recognize them, they are often unwilling or unable to put them into effect. The question of equitable rates is in reality a very complicated one, and the employment of a person who is expert enough in rate matters to construct a schedule based upon a proper consideration of all items that should influence a decision in so important a matter is usually quite beyond the financial reach of small plants. Where is the small utility to turn for assistance at such times? Shall it maintain its so-called independence and continue to go on as before, obtaining indifferent success because nobody is able to offer something better, or because consumers or taxpayers are loath to make complaint of a plant in which they have an interest?

Let us see the results of such procedure. The commission in Wisconsin requires that each utility submit schedules of rates for approval. A great many so submitted are based on erroneous principles, as noted in the following case: In January, 1913, a municipality submitted the following schedule for water rates:

1000 gallons or less per month.....	\$0.60 per 1000 gallons
1000 to 2000 gallons per month.....	0.50 per 1000 gallons
2000 to 3000 gallons per month.....	0.40 per 1000 gallons
3000 to 4000 gallons per month.....	0.30 per 1000 gallons
Minimum charge \$7.20 per year	

This schedule appears to be based on equitable principles; apparently there is a fair minimum charge and the rates to the consumer

decrease as his consumption increases, but if these rates be plotted into a curve there at once appears a woeful amount of discrimination. If consumers "A," "B," and "C" use 2000, 2500, and 3325 gallons respectively, they each pay one dollar per month. If "A" who pays one dollar for 2000 gallons uses 2100 gallons, he falls into the second group and pays only 84 cents. Therefore by consuming 2100 gallons instead of 2000 gallons his bill becomes 84 cents instead of one dollar.

The above is simply an illustration recited as a type of what the smaller plants, whether private or municipal, must contend with largely because of inability to employ expert advice.

According to the annual returns received by the railroad commission from utilities in Wisconsin for the year ending June 30, 1914, we find that there are 196 electric plants privately owned and 72 electric plants owned by municipalities. All of those owned by municipalities with one exception are in towns, villages and cities with a population of less than 10,000. Reports from the water companies of this same date show that there are 26 plants owned by private parties and 163 by municipalities. No telephone companies are owned by municipalities in Wisconsin and municipal gas plants are of minor importance as only the small acetylene or gasoline plants are municipally owned. Thus it is seen that in the electric and water business there is a total of 222 privately owned and 235 municipally owned plants in the state. Several additional plants were built in the state during the year which received the attention of our inspectors but which did not make the regular annual report.

SERVICE

The public utilities commissions in several of the states, including Illinois and Wisconsin, have issued rules of service for gas and electric properties. Efforts have also been made to prescribe equitable service requirements with respect to the operation of water plants and tentative rules have been drawn in Wisconsin, but thus far no definite instructions have been issued. In all branches of utility service, however, high standards have been insisted upon, whether definite rules are published or not. Briefly these requirements are, in the electric business, a relatively constant voltage to be maintained at all times when required by the consumers, accuracy of meters, reasonable business methods and above all no dis-

crimination either in favor of or against any consumer. For water service, an adequate supply of good pure water, accuracy of meters, adequate provision for fire protection, and as in the electric business, reasonable business methods and no discrimination. Requirements for service in the gas business are based upon the same general consideration, with the addition of standards for heating value, limitations in pressure variations, and quality of the gas.

In order that the commission may be kept informed at all times respecting compliance with standard requirements in the various plants, the state has been divided into several districts, and an engineer placed in charge of each district whose duties include periodical visits to all plants, for the purpose of checking up service in each, and also for the purpose of offering such advice as possible where this seems necessary.

During the year ending June 30, 1914, these engineers made 209 inspections of 170 of the privately owned electric plants and 94 inspections of the 76 municipally owned electric plants, making an average of about 1.2 inspections per plant. No regular service inspections of water plants are carried on in Wisconsin. In the investigations made by our inspectors, not only of complaints but of routine service matters, it is found that the rules and regulations laid down by the commission are being violated continually by municipal as well as by private utilities and it is necessary to follow up these inspections from time to time in order to impress upon the operators the importance of rendering such service that full compliance with the rules will result. These violations are most often in the nature of excessive voltage or pressure variation, low heating value of gas, failure to test meters within the proper time, etc.

The following brief review of inspection records of a typical small municipal electric plant gives an idea of the developments from the first inspection to the present time:

This municipal plant was first inspected in March, 1909. Two single phase generators supplied the service to 180 consumers.

An inspection in December, 1909, showed that the utility was not fully complying with the meter requirements, although satisfactory voltage regulation was being maintained.

An inspection in June, 1910, showed that the meters had been tested, as required, but that there was excessive variation in three of the six localities where records were taken. Several interruptions in service had occurred on account of the same trouble. Installation meter tests were not being made, as required.

An inspection in September, 1910, showed three of the four voltage records outside of the allowable limits.

An inspection in October, 1911, showed the voltage regulation to be unsatisfactory, the meters had been neglected and the master meter was found to be in unsatisfactory condition for use.

An inspection in June, 1912, showed that the voltage variation was even worse than that formerly reported and that meter testing rules were still receiving practically no attention. There have been several changes in management of this plant, but in June, 1912, the new manager reported about one-half of the meters tested.

In October, 1912, substantially the same conditions prevailed.

In January, 1913, a follow-up inspection was made which showed that no meter testing progress had been made. The superintendent gave as his reason that he had too many duties in connection with the plant operation to take care of these matters. After taking this up with the mayor another inspection was made in April, 1913, which showed that the majority of the meters had been tested and that there were still many interruptions in service. No voltage records were taken at this time. All meters were reported tested in June, 1913.

An inspection in September, 1913, showed that they are in need of additional station capacity in order to properly take care of the winter load.

In November, 1913, it was found that a new engine was being installed.

In March, 1914, an automatic voltage regulator and other equipment were ordered.

An inspection in March, 1914, showed satisfactory regulation in some sections of the system, although there was excessive variation in others. About 40 per cent of the meters were due for test.

An inspection in January, 1915, showed that some 90 meters were due for test out of a total of 280. Interruptions in service had been practically eliminated and the voltage regulation substantially improved, although still outside the requirements in some localities.

On one occasion an inspector reached a municipal plant within a few days after its one engine had broken down and the lighting business had been entirely discontinued. Upon inquiry he discovered that it was the intention of the village to keep its plant closed down until a new engine could be purchased and installed. He immediately made inquiries in the neighborhood, found a traction engine that was available, had this installed and electric service supplied the village within 24 hours. This traction engine carried the load successfully, though of course not very satisfactorily with respect to voltage regulation, until the new engine was purchased and the service again placed on a substantial basis.

In another instance complaint was brought before the commission of the condition of the water supplied by a municipal water plant in

a large city. After investigation the commission decided that it was necessary to seek an entirely new supply. The water had been taken from a river and pumped into the mains without filtration. The commission made extensive investigations and discovered that a very satisfactory supply of water could be obtained from wells driven on some vacant land within a short distance of the city. The city was required to purchase this land, drive the wells and install a new pumping system with the result that it now has a very good sanitary supply of water.

As an illustration of the variety of subjects which must be dealt with by each plant the following brief summary is submitted of the work carried on by one of the district engineers during one month late last year:

The inspector visited Mineral Point where a routine electric service inspection was made, including the taking of four voltage records by means of a recording instrument installed in each of two localities. A complete inspection of the meter and station records for the past year and a half was made and three persons were interviewed regarding electric service matters. A detailed report was made of considerable new electrical construction work. While in Mineral Point two telephone utilities were inspected, data collected regarding the equipment and operating conditions of each for the state telephone directory, as well as a report regarding the compliance of each company with the various rules of telephone service. Data were also collected for the water works directory.

While the recording instruments were still connected at Mineral Point, the inspector checked up the service conditions at Linden which included the meter operating records of the electric utility, the checking up of telephone service conditions and the collection of data for the water works directory. While in Linden the inspector received an informal complaint regarding the routing of telephone toll messages and controversy between the disputing companies was partly adjusted by the inspector and the questions which he was unable to settle in the field were reported to the commission for further attention.

Dodgeville was next visited where routine electric and telephone service inspections were made and the data for the water works directory collected.

A formal investigation regarding the service of the Leeds Farmers' Telephone Company necessitated that the inspector meet with the stockholders and directors of this company at an inland town 8 or 10 miles from the railroad at which time several hours were spent in discussing in open meeting the various solutions of the difficulty pending to determine as far as possible which of the several possible solutions would best suit the subscribers. After this meeting the inspector made definite recommendations regarding the telephone engineering features involved. This matter was handled on a Saturday and was not far from headquarters.

During the following week routine electric, telephone and water works matters were covered for Hazel Green, Benton, Cuba City and Shullsburg.

It was also necessary for the inspector to visit Galena, Illinois, where the main offices and plant of the Interstate Light & Power Company are located. This utility supplies the service in Platteville, Shullsburg, and to many mines in Wisconsin, and sells current to the municipalities of Hazel Green, Benton and Cuba City that supply service within their own limits.

On the following Monday the inspector returned to his routine work in the southwestern part of the district, visiting Platteville where one routine electric and two telephone service inspections were made, including the various phases of the work handled above. Eight voltage records were taken in Platteville and the records summarized for the past 10 months. Data for the water works directory were also collected in this city. The inspector also investigated the origin of two fires which were caused by high potential wires coming in contact with secondaries entering buildings. This was made upon informal complaint by the president of the Business Men's League, who requested the inspector to make the investigation stating that he had just sent a letter to the commission requesting that this be done.

The inspector next visited Lancaster and checked up the routine matters in connection with one electric and two telephone utilities. This involved the description of the equipment and practice of seven telephone centrals; also report regarding construction of transmission lines by the Lancaster utility. Water works directory data were also collected.

Fennimore was then visited where the routine work was carried on in connection with one electric and three telephone utilities. Material for the water works directory was collected and local conditions regarding a formal complaint on electric service, rates, etc., were investigated. A routine inspection was made at Belmont covering electric and telephone utilities, and Dodgeville was again visited on the way to headquarters to check up the complaint of a consumer alleging inadequate and interrupted power service. This complaint had not reached the commission in time to be investigated at the earlier visit to Dodgeville.

During the following week two days were spent at Muscoda in connection with the routine electric and telephone inspections. Investigations were also made in connection with a formal telephone service complaint after which recommendations were made regarding the decision in the case. Several meters were tested to acquaint the local superintendent with the commission's method of testing and to investigate an informal complaint regarding the accuracy of a certain meter adjustment for assumed over-charge of a meter which the inspector found to be accurate. Another informal matter handled in Muscoda was in connection with an alleged discriminatory rate charged the railroad company for lighting the depot. In addition to the above matters handled in the field, the inspector spent two days on office work writing up reports and looking over records of previous inspections.

In all cases a part of the engineers' work consists of investigating as to the manner in which each utility is complying with the various rules, together with suggestions and instructions respecting them as well as respecting efficiency, safety, etc.

RATES

The principle now appears to be pretty well established that rates should be based primarily upon the cost of service. A thorough understanding of the operating conditions of a plant must therefore be obtained before any determination of the proper charges for service to a consumer can be made. Before reasonable cost can be ascertained it is necessary that the investigating body have accurate detailed operating cost records of the plant under consideration, comparative cost records of plants operating under similar conditions, and a thorough understanding of the local conditions surrounding each plant.

The importance of these considerations was early recognized and shortly after the public utilities law became effective in 1907, the Railroad Commission of Wisconsin ordered all utilities to keep accounts according to certain prescribed forms. The forms required vary with the class of utility and with the size of the community served. In general, class A reports are required from cities of 10,000 population or over; class B reports from cities with a population of from 3000 to 5000; class C reports from cities with a population of 1800 to 3000; class D reports from cities and villages with a population of 700 to 1800; and a report called the "condensed" report for utilities in towns and villages having a population less than 700.

The following is quoted from an unpublished report recently made by the statistical department of the railroad commission. It sums up briefly the purposes for which the uniform classification was inaugurated:

The uniform classification of accounts prescribed for the utilities of the state is designed particularly to meet the needs for rate making purposes. The main object of this system of accounts is to so group the operating expenses that the cost for different consumers and classes of consumers can be determined. Each class of service incurs certain expenses. The requirement in the accounting procedure, therefore, is to segregate and apportion the operating expenses as far as practicable among the classes served. Certain expenses may be charged directly to the service for which they are incurred, and other items which cannot be so distributed because they are common to two or more services are placed in classifications by themselves so that when the question affecting rates arises they can be distributed over the respective classes by the rate fixing body, according to known facts and established principles. Unless the accounts of the utility under consideration have been kept in accordance with the principles of cost accounting, the cost of service for the respective consumers cannot be determined. Any other basis for the determination thereof would result merely in individual opinion and estimates.

A great deal of objection is raised by municipalities in Wisconsin against those requirements for the keeping of uniform records, due largely to a lack of appreciation of their value for the purposes for which they are intended. Little difficulty has been experienced by the commission in persuading the private utilities to keep such records properly, but some of the municipalities have been hard to convince. Several years ago one city in Wisconsin, having a population of about 17,000 people, took over its water plant from a private concern as permitted under the provisions of the public utilities law. The commission has ever since been trying to induce the city to keep accurate operating records as well as construction costs. Recently a complaint on rates was made against the city; the engineers visited the place to obtain records of construction and cost and found the book-keeping in very poor condition. All items of expense of the city, including water works construction, operation, etc., were on consecutively numbered vouchers. In order to determine what had been spent for construction and operation of the water plant it was necessary for the engineer to look through every voucher passed by the city in the years since the plant was taken over. The cities do not appear to comprehend the fact that accurate records of the financial transactions of the utility are necessary as a basis for the determination of equitable rate schedules.

If, however, it be conceded that consumers are receiving equitable treatment only when the schedules are so constructed that each is required to meet as nearly as possible his proper share of the expenses of the utility, then the necessity for keeping accurate operating records is proved, for in no other way can these results be obtained. Several instances have occurred in Wisconsin in which the railroad commission has found it impossible to make rulings on account of lack of operating records, and it has been found necessary to postpone the decisions until at least one year's records could be obtained.

Quoting from the decision of the commission in the case of the Troy and Honey Creek Telephone Company for authority to increase rates, W. R. C. R., Volume 6, page 555:

Until the utility keeps the cost of renewals, replacements, and new construction separate from operating expenses, it will be impossible to determine the exact needs of the company in the way of revenue. . . . It is quite possible that the application therein is reasonable and that it should be granted. Just what the real situation is in this respect, however, we have not been able to fully determine, owing to the condition of the records and the reports of the business of the plant that have been submitted to us. If the

petitioner will comply with the Utilities Law and keep its records as provided therein, or so as to disclose the condition of its business. . . . this Commission will be ready to reopen this case and to endeavor to the best of its ability to reach a fair and equitable decision therein. Until these steps have been taken by the petitioner, we are not in a position to safely pass upon the issues involved, and the proceedings in this matter are therefore, for the present, dismissed.

There have also been before the commission many other cases of a similar nature which it was found impossible to handle in a satisfactory manner because of lack of proper operating statistics. This question of proper operating data is in a sense independent of the question of state control, but without some centralized regulating body requiring these reports there is very little reason to think that either municipal or private utilities will keep records in such form as to be of use for these purposes.

The reports received by the Railroad Commission of Wisconsin from various utilities for the year ending June 30, 1914, have been divided into three classes: good reports, fair reports, and poor reports. These are tabulated below for electric plants and for water plants, separating between private and municipally owned properties and further separating as between the various classes of utility according to the size of the city served.

Number of electric plants in Wisconsin making good, fair and poor reports to the railroad commission on June 30, 1914

CLASS	PRIVATE				MUNICIPAL			
	G	F	P	Total	G	F	P	Total
A.....	20	6	4	30	*			
B.....	19	16	5	40	5	3	9	17
C.....	12	9	3	24	5	5	2	12
D.....	22	14	7	43	8	7	10	25
Condensed	19	26	14	59	3	10	5	18
Total.....	92	71	33	196	21	25	26	72
Per cent.....	47	36	17	100	29	35	36	100

* At this time there were no class A municipal electric plants in Wisconsin.

Number of water plants in Wisconsin making good, fair and poor reports to the railroad commission of June 20, 1914

CLASS	PRIVATE				MUNICIPAL			
	G	F	P	Total	G	F	P	Total
A.....	7	1	1	9	5	6	2	13
B.....	3	1	4	8	8	9	20	37
C.....	2	0	0	2	8	8	8	24
D.....	1	1	1	3	7	22	22	51
Condensed	2	1	1	4	15	14	9	38
Total.....	15	4	7	26	43	59	61	163
Per cent.....	58	15	27	100	27	36	37	100

In general, this information may be summed up as follows: of the 196 electric plants privately owned 47 per cent made good reports, 36 per cent made fair reports, and 17 per cent made poor reports. Of the 72 electric plants municipally owned 29 per cent made good reports, 35 per cent made fair reports, and 36 per cent made poor reports. Of the 26 water plants privately owned 58 per cent made good reports, 15 per cent made fair reports, and 27 per cent made poor reports. Of the 163 water plants municipally owned 27 per cent made good reports, 36 per cent made fair reports, and 37 per cent made poor reports.

The tables given below show the financial data with respect to the municipal plants both electric and water which make the reports referred to in the above table.

Summary of financial data of municipal electric utilities in fourth class cities and villages June 30, 1914*

	PROPERTY AND PLANT	OPERATING REVENUES	OPERATING EXPENSES**
Good reports.....	\$679,793	\$225,295	\$150,637
Fair reports.....	548,362	182,456	129,934
Poor reports.....	416,999	154,830	106,284
Total.....	\$1,645,154	\$562,581	\$286,853

* 10 utilities are omitted because of incomplete reports or unavailable data.

** Excluding interest, depreciation and taxes.

Summary of financial data of municipal water utilities in fourth class cities and villages June 30, 1914*

	PROPERTY AND PLANT	OPERATING REVENUES	OPERATING EXPENSES
Good reports.....	\$1,354,879	\$147,881	\$86,319
Fair reports.....	2,109,048	238,797	158,062
Poor reports.....	1,481,500	172,495	104,584
Total.....	\$4,945,427	\$559,173	\$348,965

* 25 cities are omitted because of incomplete reports or unavailable data.

Summary of financial data of municipal water utilities in cities of 10,000 population or over June 30, 1914

	PROPERTY AND PLANT	OPERATING REVENUES	OPERATING EXPENSES*
**Good reports.....	\$9,652,303	\$1,171,884	\$357,367
Fair reports.....	2,342,542	202,969	90,764
Poor reports.....	726,931	96,570	41,261
Total.....	\$12,721,776	\$1,471,423	\$489,392

* Excludes interest, depreciation and taxes.

** Includes Milwaukee, the values for which are more than three-fourths of the total.

From the above tables the following facts may be gleaned: for the municipal electric utilities making these reports 60 per cent of the operating revenues are in plants from which unsatisfactory reports are received.

In the municipal water utilities in fourth class cities and villages 74 per cent of operating revenues are in plants from which unsatisfactory reports are received; and in the municipal water utilities in cities of 10,000 population and over, 21 per cent of operating expenses are in plants from which unsatisfactory reports are received. This latter per cent would be considerably higher were it not for the fact that the city of Milwaukee makes a good report and its values are some two-thirds of the total values in the entire group.

Since both fair and poor reports indicate a lack of knowledge of what is really being accomplished in operating matters, a further summary would be as follows: in the privately owned electric plants in Wisconsin 53 per cent of the reports were unsatisfactory; in the municipal electric plants 71 per cent were unsatisfactory; in the privately owned water plants 42 per cent were unsatisfactory and in the municipal water plants 73 per cent were unsatisfactory.

In spite of the unsatisfactory condition of the reports received there is shown a great advance over the records kept before the commission prescribed definite forms of accounts. Recently the commission's accounting department has been giving a great deal of assistance to municipalities as well as private owners of utilities for the purpose of starting them out on a proper accounting basis. It is found that when not required to do so by the commission, municipal utilities seldom keep records in proper shape for adjustment of rates. Construction costs are confused with operating expenses; in many cases no distinction is made between repairs and replacements. Many times the records of the utilities are not separated from those of the general business of the city as was illustrated in the case above cited. Not only is it impossible from such records to make a fair determination of the cost of the different classes of service, but even the total cost of the service cannot be obtained. Such records must be kept properly whether rates are to be controlled by the central commission or by the municipality itself.

It is readily conceivable that a schedule of rates may be free from discrimination as to individual consumers, as well as to classes of consumers and the total profits may not be excessive, but still the consumers as a whole may be paying more than they properly ought to pay, because of inefficient operation of the plant. The question in this form applies as much to municipal plants as to privately owned plants. It is important to know that operation is efficient, and in order to determine this question it is necessary to have records of plants other than the particular one under consideration. With a system of local municipal control there is but one method of obtaining this information. Each municipal utility will be put to the expense of making such an investigation of the records of other plants as may be required to determine this matter. This investigation will necessarily have to be made by some person properly equipped to make such a study and few, if any, of the smaller municipal utilities can afford such an investigation. Even the possibility of such an investigation presupposes that the individual plant records will be properly kept, which past experience shows is not the case. Furthermore, even though the individual utilities may keep their records in such form as to determine this matter of proper expense in a satisfactory manner, still, unless there is distinct uniformity in the accounting methods, it will be difficult to make the necessary comparisons. Under supervision of the Railroad Commission of Wisconsin

this question of uniform accounting is insisted upon and is being obtained.

In order to illustrate another important use to be made of operating statistics there is given the following table showing the total operating expenses in dollars per million gallons pumped for Class A municipal water utilities, taken from the annual reports for the fiscal year ending June 30, 1912:

Municipal water utilities—class A

Detailed and total operating expenses in dollars per million gallons pumped for year ending June 30, 1912

LOCATION OF COMPANY	MILLION GALLONS PUMPED	TOTAL PUMPING	TOTAL DISTRIBUTION	TOTAL COMMERCIAL	TOTAL GENERAL	TOTAL UNDIS-TRIBUTED	TOTAL OPERATING EXPENSES
Appleton.....	513	\$16.58	\$2.85	\$0.62	\$1.75	\$0.75	\$22.15
Eau Claire.....	730	7.80	5.18	2.12	1.31	0.55	16.96
Kenosha.....	1,161	11.50	3.89	1.21	1.23	0.17	18.00
La Crosse.....	1,025	15.91	5.05	0.39	0.84	0.34	22.53
Madison.....	688	38.21	6.86	4.50	2.14	0.61	52.32
Manitowoc.....	332	19.51	5.90	0.38	1.88	0.77	28.44
Milwaukee.....	17,024	6.69	3.66	3.32	1.34	0.90	15.91
Sheboygan.....	1,121	11.52	2.62	0.33	2.54	1.17	18.18
Watertown.....	304	25.25	6.99	2.23	4.35	0.86	37.45
Waukesha.....	264	54.59	27.47	0.33	7.38		91.67
Wausau.....	841	12.64	2.07		1.18	0.38	16.60
Average.....	1,495	20.94	5.53	1.85	6.05	0.89	35.32

The above table shows the total cost per million gallons pumped as well as the various items which compose this total, such as cost of pumping, distribution, etc. This has been determined upon a uniform basis and shows the particular plants which are operating at a cost far above the average. In one case the total cost per million gallons pumped is \$91.67 and in another \$52.32. The normal cost exclusive of these two plants is approximately \$25 per million gallons pumped. These figures are of course not conclusive evidence that the two plants mentioned are being inefficiently operated, but it opens a line for careful investigation of these plants. Add to the above a definite knowledge of local conditions surrounding each situation and it is then possible to make a proper decision in each case. Such methods of keeping records permit an investigation not only of the

total actual cost but of each particular item of cost, which thus permits the matter to be attacked in the necessary detail. In the accounting required by the commission the accounts are still further subdivided in order to assist in detecting the various items which go to make up the particular cost in each class.

In a recent investigation by the commission with respect to the rate in a gas plant, the accounting showed that, by comparison with results obtained with other plants, this utility was producing some 10 per cent less gas per pound of coal than the normal and that the losses in distribution were almost twice the normal. It was also found that the maintenance expenses were some six cents *more* per thousand cubic foot of sales than the normal as shown by other plants. These facts were taken up with the utility management who admitted the inefficiency and acknowledged that these matters should be taken into account in the fixing of rates.

In another case in which water rates were under investigation comparisons with other utilities showed that the cost of fuel used for pumping was considerably above normal. In that way it was determined that a reduction of about 40 per cent should be made. As a result this reduction was actually made in computing rates. Since that time the expenses for fuel in the operation of this plant have been within 5 per cent of the amount determined upon by the commission.

These illustrations of course are applicable to municipal as well as to privately owned utilities and are cited for the purpose of emphasizing the necessity of accurate accounting methods.

The commission has had before it many cases involving rates and service of municipal plants. An investigation of the various reports and files of the commission shows that these complaints are on a variety of subjects, such for instance as the following: excessive and unwarranted water rates, inadequate commercial service, unsatisfactory water resulting from failure to flush out mains, sand and dirt in the mains, unsanitary supply, inadequate supply, lack of pressure for fire protection, entire discontinuance of service, discrimination between metered and flat rate customers, unjustifiable rates, application for increases in rates, application for equalization of rates, application for adjustment of individual rates, installation of meters and proper manner of paying for same, refusal to permit use of certain types of meters, inequitable distribution of rates, refusal to furnish electric and water rates, refusal to extend water mains and electric wires, classification of certain services, complaint against

council for changes in rates, excessive charges due to leakages, application for valuation for municipal purchase.

This list of types of complaint shows the great variety of subjects which the commission is required to deal with in connection with municipal plants, where the question of total profits is not an issue. In view of this, where is the individual consumer to find redress if there is no central disinterested body in control? If redress were possible with local control, why should not these matters have received the necessary consideration without compelling the individual to go to the commission for satisfaction? Is it likely that the local authorities will be more anxious to satisfy the complainant if there is no opportunity for him to appeal than when it is a known fact that he can lay his case before the higher authority?

Even when municipalities undertake the making of schedules with the best of intentions they are in general not in any position, because of lack of ability or finances, to attack the problem in a proper manner, and, when their actions are controlled or affected by political issues, the question of equitable rates is too often subordinated to political demands. In many cases the operation of the plants is used to furnish capital for city politics and under such circumstances it is difficult to conceive of fair rate schedules being put into effect by municipalities when the matter is not controlled by a central body. Experience in Wisconsin before the utilities law became effective, which is probably duplicated in all other states, has been that in many cities and villages under municipal control some individuals are actually given water, gas, or electric service for years without contributing one cent and often without even a record that a service connection had been made. The other consumers are necessarily called upon to pay increased bills resulting from such discrimination.

In general each utility, whether municipal or privately owned, is supplying two distinct types of service. First, public service such as protection against fire, street lighting, water and lighting for public buildings, etc. Second, service to private consumers such as general lighting, power and water service. In other words, the two distinct types of service are, first, those for which payment should be made by taxpayers through the medium of the city taxing department, and second, those for which each private consumer should pay his fair share direct to the department. In all investigations relative to rates the first consideration should be a fair division between the

property used for public purposes and that used for supplying private consumers. The engineers of the Railroad Commission of Wisconsin have made very careful separations of these values in all instances, and the accounts are required to be kept in such manner that operating expenses may likewise be divided between these two principal accounts. It is often a difficult matter to induce municipalities to permit the water and light department to render bills against the city for the proper amounts to cover the share of the expenses which are properly chargeable to the taxpayers, and it is more difficult still to secure the actual payment of these amounts, yet for every dollar thus retained the consumers have to pay a corresponding amount in addition to the cost of their own service, which amount should in justice have been paid by the taxpayers. Taxes are unpopular and unless compelled to do otherwise there is a strong tendency on the part of municipal authorities to keep taxes down at the expense of the private consumers.

Schedules submitted by municipal plants for approval by the railroad commission often show the following inequalities: in some the city pays nothing for service and the general users bear all of this cost. This results in discrimination in favor of taxpayers. In some cases the city pays a part of the cost of public service but not a sufficient amount. This again results in discrimination in favor of the taxpayers. This condition exists where hydrant rental or street lighting allowances are too low or where no charge is made against the city for lighting and water service to schools and other public buildings. In some cases the rates for general service are so low that they do not cover the fair share which the consumers should bear, the remainder being made up by taxation. This results in discrimination in favor of the consumers and against the taxpayers. These points emphasize the necessity of a careful study of the two phases of the problem in order that each may receive just consideration and discrimination be avoided.

As a further illustration of the above remarks we find in one of the commission's decisions relating to a municipal electric light and water plant the following:

The investigation has shown that while the electric department is self-sustaining the water department has failed to earn a sufficient revenue to meet its legitimate expenses. . . . That while a reduction in rates for electric service can be offered, the rates should be adjusted so as to more equitably distribute the burden of expenses; that the charge for street lighting should

be increased in order that this branch of the service bear its just share of the total cost of operation; that the water rates should be adjusted so as to better meet the conditions now existing and which in the near future will exist. That the city should bear a larger burden of expenses due to the larger proportion of the system made necessary for fire protection and other public uses. W. R. C. R., vol. 5, p. 5.

After having made a proper division between expenses chargeable against the public and those chargeable against the private consumer, then further subdivisions are needed to determine the fair division of cost between different classes of consumers, such as users of electric light as compared with those using electric power; users of water for domestic purposes only as compared with those using water for commercial and industrial purposes. Often these consumers are placed either on a flat rate or a uniform meter rate with the result that there are usually discriminations affecting the different interests.

One of the difficult features which must receive consideration whether the rate schedules are being prepared by local management or by a central body has not yet been touched upon. An electric plant must be of such capacity that it can at any time and upon a moment's notice be called upon to supply the maximum demand which may be put upon it. In this it differs from a gas plant or a water works plant in both of which the product can be stored. Electrical energy can be stored only to a very limited extent and even such storage requires expensive equipment. The question of fair rates between consumers, some of which use this electric power only during peak periods, others of which use it only during off-peak periods, and others which use it during all periods of the day, is one with which the average plant operator is unable to cope and unless schedules are made or supervised by trained and experienced authority, discriminations are certain to result due to the above mentioned causes. Furthermore, each particular case is a problem in itself and though the same principle may be applied to all, each must receive separate consideration.

It is often easy for a plant operator to discover various discriminations, but in general it is beyond the ability of the average manager or local commission to so construct a schedule that these will be eliminated. This inability is emphasized in many cases brought before the commission. The following is quoted from some recent decisions of the commission, as samples of a great many such cases brought up for adjustment:

In Re Application of the Cumberland Municipal Electric Light Plant for Authority to Increase Rates. "The applicant in this case desired to increase certain of its present rates for electric current, on the ground that these rates were inadequate and did not cover the cost of furnishing the service involved. Upon hearing and investigation it was found that the applicant's rate schedule was not properly adjusted and that certain classes of consumers paid less than their just share of the cost of operating the plant. Because of these facts the Commission endeavored to compute more equitable schedules of rates, and has authorized the applicant to put these rates into effect." 4 W. R. C. R. 214.

In Re Application of Stoughton Municipal Electric Light System for Authority to Increase Rates. "The applicant in this case stated in its petition that it desired to make such changes in its rate schedules as to enable it to more fully extend its business. At the hearing in this matter it was shown that the present schedules were not, on the whole, so adjusted as to meet local requirements. These facts were substantiated by the further investigation into the situation which was made by this Commission. For these reasons the applicant was authorized to readjust its rate schedules on the basis outlined in the order in this case." 3 W. R. C. R. 484.

The authorities are coming more and more to realize the necessity for scientific investigation of methods of rate making with respect to the cost of service principle and many cases are being laid before the railroad commission for determination. The following quotations are samples of the many cases of this nature being voluntarily brought before the commission by the city and village officers themselves.

Board of Water Commissioners of Fond du Lac. the Railroad Commission has been called upon to recommend not only rates for service, but also to recommend an entire set of rules and regulations governing the relations between the plant and its consumers.

Baraboo City Water Works. This is a request made by the water works commission of the city of Baraboo that the Railroad Commission investigate the financial and operating condition of the Baraboo Municipal Water Works Plant and recommend a fair and equitable apportionment of the total expenses of said plant between the *public or city and private or domestic consumers*, and also to make such further recommendations as regards the *rate schedule* in general as may appear just and reasonable in view of the conditions.

Evansville Municipal Electric Light Plant. "This matter is an investigation on motion of the Commission of the rates, rules and regulations of the municipal electric and water utilities of Evansville, Wisconsin. The investigation arises from a series of requests from the city's officials for assistance in revising and adjusting the rates and practices of its utilities."

Following is a list giving some of the lines in which the Railroad Commission of Wisconsin is voluntarily assisting municipalities with a view of improving standards of service, and insuring equitable rates:

Establishment of proper accounting procedure, calculation of proper rate schedules, proper methods of recording meter test records, calibration of necessary testing apparatus, assistance in regulation of voltage and other features of the service, assistance in drawing contracts for construction of electrical and water plants, assistance in determining upon satisfactory water supply, investigation of water power sites for municipal plants, valuation of property for purposes of accounting, valuation of property for municipal purchase, many other consulting engineering matters on a variety of subjects connected with the construction and operation of water, gas and electric properties.

During the first few years of the operation of the public utilities law in Wisconsin the various utilities found difficulty in complying with the uniform accounting system required by the railroad commission. Small utilities were unable to pay the amounts demanded by private accountants for doing the work and these accountants did not always adhere strictly to the commission's classification. As this latter is an essential feature for the purpose of rate making, the commission adopted the system of supplying accounting assistance to utilities. This is done by the commission's own accountants and the utilities are required only to pay the actual cost thereon. Many municipalities are taking advantage of this opportunity and the commission is installing accounting systems as rapidly as its accountants can carry out the work.

No doubt one of the best means within reach of operators for keeping themselves informed in the utility business is to become identified with national associations organized for the promotion of the interests of those connected with utility business.

In order to obtain an idea as to what extent those interested in plant operation, especially those connected with municipal plants, are availing themselves of such opportunities to familiarize themselves with latest practices, search was made of the 1914 membership list of the American Water Works Association for the names of persons identified with various plants, municipal and private, in Wisconsin. The results of this investigation show that of the 26 privately owned water plants in Wisconsin 6 are represented in the active membership and none in the corporate membership. Of the 163 municipal water plants in Wisconsin 9 are represented in the active membership and one in the corporate membership.

A similar investigation of the membership of the New England

Water Works Association reveals the fact that of the six members residing in Wisconsin, one represents a private plant, and none represent municipal plants.

The membership list of the Wisconsin Electrical Association shows 5 individual members and 4 company or commission members representing the 72 or more municipal electric plants in the state.

The exceedingly small number of members of the two national water works associations representing municipal plants in Wisconsin, being only 9 for the 163 plants, and the correspondingly small number belonging to the electrical association indicate that municipal officers are very slow in taking advantage of the means readily at hand for keeping themselves informed upon important matters over which they have control and for which they should feel a deep concern.

No doubt the short tenure of office which is so general in municipal affairs is largely responsible for this condition. But whatever the reason, it is a fact that has a decided bearing upon regulation of utilities by local boards. It is very probable that this short tenure of office is one reason for inefficiency in municipal plant operation. All too often a change in the personnel of the city officers means a change in the management of the plants. Again, each administration is loath to assume the responsibility of burdening the city or village with new machinery or equipment, the result being that obsolete or inadequate types are very often retained in municipal plants long after their usefulness is gone, a fact that would be recognized and remedied much earlier in a privately owned plant.

These remarks are not intended as arguments against the municipal ownership of public utilities. They are intended to point out the fundamental difficulties certain to be encountered by municipalities in attempting to obtain high standards of service and fair rate schedules for their own utilities. In very few instances are the municipalities financially able to employ the necessary expert advice to build up proper schedules or recommend proper standards of service. Furthermore, without uniform accounting systems, what basis could even an expert employ? It is certain that uniform accounting systems will not be installed unless a central board or commission prescribes such systems and has authority to see that the accounts are properly kept.

A state commission, by the employment of a very few experts, can be in position to install and supervise proper accounting methods

at almost negligible cost to the hundreds of utilities in the state. By means of their experience and training, supplemented by the statistics thus obtained, these experts are in position to recommend advisedly on the subjects of proper rates. Engineer inspectors who visit all plants and study methods of operation under all varying conditions with respect to economy and efficiency are surely better able to advise with respect to standards of service and operating economies than are local boards or managers who seldom if ever observe conditions outside of their own neighborhoods, and whose terms of office are often so limited that they are no more than partially acquainted with their own local problems than new officers supplant them, who in turn have the same problems to master. Under such circumstances it is no reflection upon these local boards and managers to say that the problems are quite beyond them. The conditions are not within their control. But here stands an ever ready agency supplied by the state and prepared to give just such advice and assistance as are necessary to permit these managers to meet their problems in an efficient and inexpensive manner. Why should they not avail themselves of it? One of the very disheartening features of our experience in trying to maintain high standards of service, especially in the electrical field in Wisconsin, is the distinct deterioration often noticeable at once upon a change of management. After years of patient labor building up a municipal plant to the point where conditions are satisfactory, the inspector returns after a few months absence to find a new man in charge who is entirely ignorant of all that has gone before. A large part of the work has to be done over again in the same painstaking manner. The effect of these lapses is discouraging, but they serve to emphasize most emphatically the great advantage of having at hand means of placing the service again on its high plane, and are sharp reminders of what might be expected of the future of the service if no such authority existed.

There appears to be a well established conviction that a central commission is needed to regulate service and rates of private utilities. Conceding this, and in view of what has been shown above, is this not itself a strong argument for regulation of municipal properties also by a centralized body?

There is no doubt that the service standards and accounting methods prescribed and insisted upon by the railroad commission throw a burden upon municipal plant operators that could be avoided to a large extent if these managers were left to their own devices,

but the fact should always be borne in mind that these standards and methods are installed primarily for the benefit of the consumers.

Village and city boards and councils are in position to make their protests heard and felt through legislation, but it is the writer's firm belief that if the consumers who are the principal owners of municipal plants and the ones who benefit most by proper rate and service regulation had a thorough understanding of the benefits to be derived from state regulation and could balance these considerations against all the disadvantages, they would almost unanimously demand state regulation with its relief from inefficient and often indifferent control by local boards or commissions.